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AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method comprising:

detecting an event that would cause cycles to be idle in a processor;

selecting diagnostic instructions based on a number of the cycles that would be idle;

issuing the diagnostic instructions to the processor during the cycles that would be idle, wherein the issuing further comprises using initial values in a first diagnostic instruction and incrementing operands of respective next diagnostic instructions, wherein the respective next diagnostic instructions use output of respective previous instructions as input;

if the diagnostic instructions partially complete during the cycles that would be idle, saving an intermediate result and retrieving the intermediate result on a next idle cycle sequence; and

comparing a final result of the diagnostic instructions with a pre-computed result.

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Original) The method of claim 1, wherein the event comprises a cache miss.

6. (Original) The method of claim 1, wherein the event comprises a task switch.

7. (Currently amended) An apparatus comprising:

means for detecting an event that would cause cycles to be idle in a processor;

means for selecting diagnostic instructions based on a number of the cycles that would be idle;

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     means for issuing the diagnostic instructions to the processor during the cycles that would be idle, wherein the means for issuing further comprises means for using initial values in a first diagnostic instruction and incrementing operands of respective next diagnostic instructions, wherein the respective next diagnostic instructions use output of respective previous instructions as input;

     means for saving an intermediate result and retrieving the intermediate result on a next idle cycle sequence if the diagnostic instructions partially complete during the cycles that would be idle; and

     means for comparing a <u>final</u> result of the diagnostic instructions with a pre-computed result.

8. (Canceled)

9. (Canceled)

10. (Currently amended) A processor comprising:

     an issue unit to detect an event that would cause cycles to be idle in the processor and issue diagnostic instructions during the cycles that would be idle to a pipeline, wherein a first diagnostic instruction uses initial values;

     an increment unit to increment operands of respective next diagnostic instructions, wherein the respective next diagnostic instructions use output of respective previous instructions as input;

     a write back unit to save an intermediate result of the diagnostic instructions and retrieve the intermediate result on a next idle cycle sequence if the diagnostic instructions partially complete during the cycles that would be idle; and

     a compare unit to compare the pre-computed result with a <u>final</u> result of the diagnostic instructions.

11. (Original) The processor of claim 10, wherein the issue unit is further to select the diagnostic instructions based on a number of the cycles.

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12. (Original) The processor of claim 10, wherein the event comprises a cache miss.

13. (Original) The processor of claim 10, wherein the event comprises a task switch.

14. (Withdrawn) A computer system comprising:

a processor comprising a counter, wherein when the counter exceeds a threshold, diagnostic code is invoked;

a storage device encoded with the diagnostic code, wherein the diagnostic code when executed on the processor comprises:

selecting a test routine to issue to the processor based on an error log.

15. (Withdrawn) The computer system of claim 14, wherein the selecting further comprises:

selecting the test routine to issue to the processor based on a history of activity at the processor.

16. (Withdrawn) The computer system of claim 14, wherein the selecting further comprises:

selecting the test routine to issue to the processor based on a temperature of a unit of the processor.

17. (Withdrawn) The computer system of claim 14, wherein the diagnostic code further comprises:

changing an interval of a count of activity at the processor based on activity of a unit of the processor and a temperature of a unit of the processor.

18. (Withdrawn) A signal-bearing medium encoded with instructions, wherein the instructions when executed comprise:

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periodically selecting a test routine to issue to a processor based on a log of errors

at the processor and a history of activity at the processor.

19. (Withdrawn) The signal-bearing medium of claim 18, wherein the periodically

selecting further comprises:

selecting the test routine to issue to the processor based on a temperature of a unit

of the processor.

20. (Withdrawn) The signal-bearing medium of claim 18, further comprising:

changing an interval of a count of activity at the processor based on activity of a

unit of the processor and a temperature of a unit of the processor.